

**The Structure of Interlocal Service Networks  
and the Effects of Administrative and Electoral Conjunctions on Their Formation**

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**Abstract**

Local problems often spill over the borders of one jurisdiction into the next, creating a need for cities to cooperate on the planning and delivery of local public services. Networks of interlocal agreements (ILAs) provide a way for cities in a fragmented metropolis to cooperate on services, and these networks may be especially likely to form when local government officials are linked through interpersonal networks. Drawing on Williams' Lifestyle Model of Metropolitan Politics and Frederickson's theory of administrative conjunctions, this paper uses network analytic methods to examine the structure of ILA networks, and to assess the impact of governing officials' interpersonal networks on the probability of ILAs forming between cities. The Detroit metropolitan area provides the context for this study. Results suggest that cities cooperate more extensively across the metro area for systems-maintenance functions, such as public works and public safety. More importantly, we find that any given cluster of cities has an increased probability of cooperating through ILAs when their city managers' participate in the same local professional network. The same effects hold true for mayors' networking with counterparts, and for some function, serve as an even stronger predictor of ILAs forming.

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Local problems often spill over the borders of one jurisdiction into the next, creating a need for cities to cooperate on the planning and delivery of local public services. This is particularly true in metropolitan areas, where local governments are numerous and fragmentation of authority can hinder efforts at collective action. With a majority of cities and counties in the U.S party to at least one, (International City County Management Association, 1997; Advisory Commission on Intergovernmental Relations, 1985) interlocal service agreements represent one of the most preferred mechanisms for achieving coordination in fragmented metropolitan areas. Interlocal agreements (ILAs) are defined as service sharing arrangements, written or unwritten, including an intergovernmental service contract, joint service agreement, or intergovernmental service transfer between two or more local government jurisdictions (ACIR, 1985).

While there is nothing new about the use of interlocal service agreements by local governments in the U.S., scholars of metropolitan governance have recently embraced the study of these policy tools with renewed interest. Calling for a “new regionalism,” Savitch and Vogel (2000) highlighted how interlocal agreements might be used an alternative to politically contentious structural reforms such as boundary changes and functional consolidation, while providing many of the same benefits of scale economies and more effective management of multi-jurisdictional problems. According to Savitch and Vogel (2000, p. 161), new regionalism is “both a policy agenda and a set of public-sector interventions that give some coherence to sprawling localities and provide them with the wherewithal to cope with particular policy issues.” One of the key public-sector interventions contained within the new regionalism is the “complex networks” approach, which involves many independent units of local governments voluntarily cooperating through multiple, overlapping webs of interlocal service agreements (Savitch and Vogel, 2000).

Similar to Savitch and Vogel's complex networks approach, Frederickson's administrative conjunction theory of metropolitan governance (1999; 2003) offers a framework

for understanding how voluntary service cooperation can be achieved in the absence of a central authority (metropolitan government). Frederickson (1999; 2003) argued that in the absence of metropolitan government, administrative conjunctions represent the paths through which local governments might overcome the problems of fragmentation and achieve effective metropolitan governance. Administrative conjunctions are ties linking professional public servants together across jurisdictional boundaries. The ties that connect public managers together, according to Frederickson, are a system of shared values and professional norms imparted by their disciplinary training. Electoral conjunctions are interpersonal ties linking mayors and other local elected officials together across jurisdictional boundaries, but these ties may not be as useful as those of professional managers for promoting service cooperation (Frederickson, 1999). Frederickson posited that conjunctive ties, and the staying power of civil servants, make professional managers the set of actors best suited for brokering and maintaining cooperative service arrangements across local government boundaries. He argues that professional managers will be more inclined toward inter-jurisdictional cooperation than elected officials, who have a shorter time horizon and may be averse to the electoral consequences of cooperation. Administrative conjunction theory draws from basic principles of institutional theory and social network theory, to describe how members of a specific discipline (professional public managers), can overcome the limits of political boundaries to enter into cooperative relationships.

Building on the theoretical ground laid by Savitch and Vogel (2000) and Frederickson (1999; Frederickson and Smith, 2003), Thurmaier and Wood examined ILAs as overlapping networks among six jurisdictions in the Kansas City Metropolitan area. Applying social network theory in their qualitative study, Thurmaier and Wood described how a single unit of local government is often linked in numerous dyadic relations with other local jurisdictions through ILAs, and those governments can in turn be involved in dyadic relationships with other local governments through ILAs, creating a dense service network structure across the metropolis.

However, the more important finding of their study was that an underlying system of social networks among city managers, administrators, and functional specialists was responsible for creating and sustaining the networks of interlocal service agreements (Thurmaier and Wood, 2002). They argued that social networks among public servants develop from a system of common values and shared knowledge that creates epistemic communities, or groups of knowledge-based experts, motivating city managers and functional specialists for cooperative action (Frederickson, 1999; Thurmaier and Wood, 2002).

Others have built on this concept using theories of institutional collective action (Feiock, 2007; 2004) and social network theory (Wood, 2006; Thurmaier and Wood, 2002) to highlight the role of secondary networks, such social and interpersonal networks in building trust among local governing officials that is needed to get interlocal service arrangements started and hold them together over time. One type of secondary network frequently credited with stimulating the use of interlocal service agreements is councils of governments or similar types of regional planning organizations (LeRoux, 2008; Feiock 2007; Thurmaier Wood 2002; Lackey, Freshwater, Rupasingha, 2002; Stephens and Wikstrom, 2000). However, informal social networks are also believed to be important in fostering cooperation through interlocal agreements (LeRoux, Brandenburger and Pandey, forthcoming; Frederickson and Smith, 2003; Thurmaier and Wood, 2002), as are organizational and individual memberships in local associations (LeRoux, Brandenburger and Pandey, forthcoming; Carr, LeRoux, Shrestha, 2009). Regional councils, informal social networks, and associations all function as interpersonal networks that provide opportunities for local public officials to interact on a routine and ongoing basis, which is critical to emergence of voluntary cooperation (Axelrod, 1984). Metropolitan governance scholars invoke this argument, reasoning that trust and norms of reciprocity will develop among local governing officials as a result of participation in interpersonal networks, which will allow for interlocal service agreements to be established (Wood, 2008; Feiock, 2007; Shrestha and Feiock, 2004; Frederickson, 1999).

This analysis draws upon insights from Frederickson's administrative conjunction theory (1999; 2003), and aims to build directly on the qualitative, case study research of Thurmaier and Wood (2002) and Frederickson (1999) by statistically estimating the effects of interpersonal networks on the formation of interlocal service agreements between local government jurisdictions. Thurmaier and Wood examined only the social networks of professional administrators, providing only a partial test of Frederickson's administrative conjunction theory. In examining the effects of interpersonal networks of both administrators *and* elected officials on the likelihood of ILAs forming, our study expands on Thurmaier and Wood's analysis and provides a more complete test of Frederickson's theory. Following Thurmaier and Wood (2002) and Wood (2006; 2008) we also examine the structure of various service delivery networks, drawing upon insights from the Lifestyle Model of Metropolitan Politics (Williams, 1971) to test hypotheses related to the centrality and density of these networks. The following questions related to interlocal service delivery networks are addressed in this study: 1) How does the structure (centrality and density) of ILA networks vary by function? and, 2) Do interpersonal networks among governing officials increase the likelihood that their cities will cooperate through ILAs? These questions are examined through a quantitative case study of a large, fragmented urban county that includes the city of Detroit.

### **Systems Maintenance Functions and Lifestyle Services**

The first question we examine pertains to the structure of ILA networks. How highly centralized and how dense are ILA networks for various services? Oliver Williams' Lifestyle Model of Metropolitan Politics (1971) provides a framework for predicting the structure of ILA networks. The Lifestyle Model accounts for two types of services in metropolitan areas: systems maintenance functions and lifestyle services. Systems maintenance functions generally relate to infrastructure. These functions are essential to maintaining the health and safety of the majority of the population. Roads, water distribution and treatment, solid waste disposal, and watershed

management are examples of systems maintenance functions. These services may be more highly centralized, or produced and delivered by a central authority within a metro area because they are politically neutral, fairly invisible to the median voter, and to the extent citizens are aware of these functions, they recognize them to be essential. High levels of networked cooperation and centralization of these functions is feasible because these services generally do not evoke political controversy. As Harrigan and Vogel aptly stated it, “equal access to sewers never threatened anyone’s lifestyle in the suburbs,” (2003, 292).

In contrast to systems maintenance functions, lifestyle services provide access to social and life opportunities. Examples of lifestyle services include parks and recreation, housing, education, and economic development, since commerce provides employment opportunities. Rather than essential functions of local government, these services reflect amenities that vary in dramatically in quality from city to city. Williams argued that these types of services distinguish the lifestyles of wealthier suburban residents, and represent the public amenities over which communities compete with one another to attract residents and businesses.

Williams argued that in the absence of any mandate from federal or state governments, “policies that are perceived as neutral with regard to controlling social access may be centralized, but those that are perceived as controlling social access will remain decentralized,” (1971, 4). Williams’ theory suggests not only that systems maintenance functions will be more highly centralized in a metro area, but that local governments will be also more likely to cooperate for systems maintenance functions than for lifestyle services, suggesting these networks will also be more dense. While the argument that cities cooperate more extensively for systems maintenance functions than for lifestyle services is endorsed by other scholars (Wikstrom, 2002; Pagano, 1999), the evidence on this subject is mixed. Earlier research supported Williams’ argument that cooperation for systems maintenance functions is more common and more likely to be centralized (Rawlings, 2003; Savitch and Vogel, 1996; Julnes and Pindur, 1994), but more recent evidence contradicts this claim (Wood, 2006). In a study of

46 jurisdictions in the Kansas City metropolitan area, Wood (2006) found that local governments were just as likely to cooperate through interlocal agreements on lifestyle services as they were on systems maintenance functions.

### *The Structure of ILA Networks*

Structure is defined as “an enduring pattern of relations” (Wasserman, 2005, 9). It is important to understand the structure of networks, because structure reveals important properties of the network and about the actors within a network. Actors are discrete social entities; it can refer to individuals, people within a group, departments within a corporation, public organizations within a city, or nation-states (Wasserman and Faust, 1994). In assessing the structure of ILAs networks as in our case, individual units of local government (municipalities, villages, and townships) represent the actors. The structure of a service delivery network can yield several important insights about the network, including which actors have power (in this case, which jurisdiction manages the network), which actors form subgroups, and how many actors in the network share ties to one another.

Centrality and density are two important metrics for examining the structure of networks. Centrality is a measure of how tightly clustered the network is around a single point on a graph, and is often used as a measure of power, prominence, or prestige of a single actor within a network. Thus, the more highly centralized a particular network, the more that network is dominated by a single actor. Given that units of government represent actors in this analysis, the county unit of government or the central city is most likely to function as the central actor in any ILA network.

Density is another way of assessing network structure, providing a measure of a network’s “completeness.” Density is a ratio of the total number of ties actually present in a network in proportion to the total number of ties that could theoretically be present, if each actor were connected to every other. As density values increase, the more ties there are among

actors. Thus, when a network is highly dense, it can be described as a cohesive, tightly connected network, and when it has a very low density value it is network in which actors share few ties, or are disconnected from one another.

We follow William's descriptions (1971) and Wood's (2006) classification system for classifying the service delivery networks in our study. The ILA networks classified as systems maintenance functions examined in the subsequent analysis include storm water management, solid waste agreements, road maintenance, wastewater treatment, and public safety. When an ILA network is highly centralized, one local government jurisdiction plays a prominent role in providing the service for a large number of other jurisdictions within the network. In the context of a fragmented metropolitan area, the central actor in a service delivery network is likely to be either the county, or a city that is much larger than the others.

The ILA networks classified as lifestyle services examined in this analysis include parks and recreation, housing, and economic development. When the service delivery network is highly dense, the extent of interlocal cooperation is greater. Larger density values represent greater amounts of service cooperation among the jurisdictions that comprise the ILA network. According to Williams' theory, systems maintenance functions are politically neutral, so they may be more highly centralized, but lifestyle services will remain decentralized because citizens fight to protect local control of these functions, and to exclude outsiders from enjoying their benefits. The lifestyle model suggests that much less cooperation occurs related to lifestyle services, so we predict these ILA networks will be less dense than ILA networks related to systems maintenance functions. Based on Williams' Lifestyle Model, we propose the following hypotheses about the structure of ILA networks, and Table 1 provides a summary of these hypotheses.

H<sub>1</sub>: Service delivery (ILA) networks for systems maintenance functions will be *highly centralized* and *highly dense*.



H<sub>2</sub>: Service delivery (ILA) networks for lifestyle-enhancing services will have *lower centrality and less density*.

### **Social Networks and Social Capital**

The second question we examine in this study is whether interpersonal networks among local public officials statistically increase the likelihood of ILAs forming between cities.

Frederickson's theory of administrative conjunction prescribes a role for social networks in predicting interlocal service cooperation, because networks help establish trust, create norms of reciprocity, and reduce transaction costs. Social networks are thought to be both a precondition to collective action by local governments (Feiock, 2007; Cigler, 1994) and to arise from it (Feiock, Tao, and Johnson, 2004). Interpersonal social networks are important because these ties are thought to create benefits in the form of social capital. Based on community-level studies, Coleman (1990) and Putnam (1993) demonstrate that social networks create social capital. Coleman (1988) defines social capital as "intangible resources such as social norms, obligations, and trust that facilitate collective action". Social capital is the individual and collective returns from investments in social relations (Lin, 2001). It is an asset that accumulates as a result of trust and mutual favors. For example, one local government may come to aid of another in the event of a natural disaster or to provide assistance in solving a crime, even in the absence of a formal agreement, based on the assumption that the recipient government will someday return the favor if needed. Coleman (1990, 16) suggests that "like other forms of capital, social capital is productive, making possible the achievement of certain ends that otherwise would not be possible in its absence."

Interpersonal networks, such as informal professional networks and local associations are specific types of social networks thought to generate social capital among their members (LeRoux, Brandeburger, and Pandey, forthcoming). This is especially so when these networks are structured to provide routine and on-going face-to-face contact among members (Axelrod,

1984; Frederickson, 1999). For example, Lackey, Freshwater, and Rupasingha (2002) found that opportunities for officials to interact played an important role in local government decisions to cooperate on community development. These authors also found that local governments' involvement with a local government association, such as a council of government (COG) or regional planning organization produced an increase in the amount of cooperation among jurisdictions. In this study, we examine the impact that two types of interpersonal networks have on the likelihood of ILAs forming between cities. For city administrators, we measure their participation in several informal local professional meetings (identified through personal interviews) as the indicator of interpersonal networking or 'administrative conjunctions', and for mayors, we measure their participation as board members in several sub-regional local government associations as the interpersonal networking or 'electoral conjunction' variable.

When two local government officials are members of the same interpersonal network that meets regularly, this affiliation should increase the likelihood that the two cities will cooperate through ILAs for some types of services. A vast literature on role-sets confirms there is a likely dependence between different sets of ties linking any given pair of actors. This notion of nested ties, or overlapping networks is known as "multiplexity." Multiplexity refers to "the tendency for two or more ties of different types to occur together; that is it to link the same pair of actors," (Carrington et al, 2005, p. 164). Multiplexity is the aspect of network theory that deals with overlapping ties among actors and suggests that actors' positions in one set of relations (in this case an interpersonal network) is likely to predict or reinforce positions in other sets of relations (ILAs between jurisdictions).

Multiplexity suggests that local government officials, who are affiliated through one or more informal professional networks or who participate in one or more local government associations on behalf of their jurisdiction, should be much more likely to be linked through ILAs ties, as a result of their interpersonal ties, or what Frederickson describes as administrative conjunctions (Frederickson, 1999; 2003). However, elected and administrative local government

officials may hold different dispositions toward interlocal cooperation, since the two sets of actors are thought to be guided by different motivations and values. Professional managers are believed to govern with a public-serving ethic (Frederickson, 1999), while elected officials are believed to govern in ways that enhance their prospects for re-election or for election to higher office. As part of their disciplinary training, public managers are socialized with values of efficiency and effectiveness, and therefore may share common assumptions that facilitate interlocal cooperation. Moreover, the longer tenure of career public servants forces them to look further into the future when considering alternatives to managing jurisdictional problems. Professional managers are also more likely to recognize the long-term consequences of disparities in service levels across the region (Wood, 2006) and to pursue interlocal cooperation as means of standardizing service levels.

On the other hand, elected officials govern according to the electoral cycle, creating an incentive for them to ensure high quality services in their jurisdiction and to exclude outsiders from enjoying the benefits of these services. Because of their shortened time horizon, local elected officials may not have sufficient time to establish trust and social capital necessary to enter into cooperative arrangements among their jurisdictions. Social network theory combined with the Lifestyle Model suggests that when two local government actors are tied through an interpersonal network, or what Frederickson calls electoral conjunction (Frederickson, 1999) they will be more likely to cooperate through an ILA related to systems maintenance functions, and this is true for both administrative as well as elected officials, as systems maintenance functions are politically neutral.

Despite the increased trust and social capital generated by interpersonal networks, we predict based on Frederickson's (1999; 2003) and Williams' (1971) arguments, that interpersonal ties among mayors will *not* increase the likelihood of ILAs forming for Lifestyle services, since these policy areas are competitive, and often politically contentious, local policy domains. In fact, increased contact through interpersonal networks may foster better

communication among local elected officials, allowing them to strategically manage the cooperation-competition dynamic, and enabling them to selectively determine the services on which they will cooperate and those they will not (Feiock, 2004). By contrast, we predict based on the theory of administrative conjunction, that interpersonal ties between city administrators will enhance the likelihood of their jurisdictions forming interlocal agreements for Lifestyle services. Unlike the majority of mayors, professionally trained public managers are socialized toward values of equity, and are more likely to recognize the long-term consequences of spillover effects created by disparities in service levels or quality in the region (Frederickson, 1999; Thurmaier and Wood, 2002; Frederickson and Smith, 2003).

Based on the Lifestyle Model of Metropolitan Politics, and administrative conjunction theory, we test the following propositions about the effects of interpersonal networks of mayors and city managers on the likelihood of ILAs forming between cities:

- H<sub>3</sub>: When mayors share a tie in the same interpersonal network (an electoral conjunction tie), their jurisdictions will have an increased likelihood of entering into ILAs for systems maintenance functions.
- H<sub>4</sub>: When city administrators share a tie in the same interpersonal network (an administrative conjunction tie), their jurisdictions will have an increased likelihood of entering into ILAs for systems maintenance functions.
- H<sub>5</sub>: When mayors share a tie in the same interpersonal network (an electoral conjunction tie), their jurisdictions will have a no likelihood, or decreased likelihood of entering into ILAs for lifestyle services.

H<sub>6</sub>: When city administrators share a tie in the same interpersonal network (an administrative conjunction tie), their jurisdictions will have an increased likelihood of entering into ILAs for lifestyle services.

Table 2 provides a summary of these hypotheses predicting the effects of local government officials' interpersonal ties (administrative and electoral conjunctions) on the likelihood of interlocal agreements forming between their jurisdictions.

## **Data and Method**

Our analysis is based on a quantitative case study of the 44 local governments comprising Wayne County, Michigan. The choice was made to examine one county over the entire multi-county metropolitan area, because network analysis is highly sensitive to missing data values. Quantitative network analysis assumes complete data (Wasserman and Faust, 2004), so a decision was made to invest time in acquiring complete data for one county that contains the urban city center (Detroit), rather than analyze multiple counties in which there were likely to be some non-respondents.

Wayne County offers an excellent laboratory in which to test theoretical predictions about the structure of ILA networks and the effects of administrative and electoral conjunctions on their formation. Wayne County contains forty three general-purpose local governments; thirty three municipalities, nine townships, and one village. Wayne County is highly diverse in its demographic and socioeconomic composition. It is home to the central city of Detroit as well as some of the nation's most exclusive suburbs. It has a population of 2.1 million, making it the largest county in the state of Michigan and the 11<sup>th</sup> largest county in the United States in terms of population.

We examine eight service areas representing ILA networks among the forty-four local government of Wayne County. Following Wood (2006) and Williams (1971), five of these

service delivery networks are classified as systems maintenance functions (watershed management, solid waste removal, roads and bridges, wastewater treatment, and public safety), and three are classified as lifestyle services (parks and recreation, housing, and economic development). Once again, these particular services were chosen for study based on the availability of complete data for all jurisdictions in the county. These networks are examined to test the first set of hypotheses about network structure, using centrality and density estimates. To test the second set of hypotheses related to the effects of administrative and electoral conjunctions on ILA formation, we also examined the interpersonal networks among local public officials who govern Wayne County's local jurisdictions. One of these interpersonal networks measures patterns of ties between city managers/administrators within the county as based on their reports of participation in informal local professional meetings, and the other interpersonal network measures board membership ties of chief elected officials in the county's three sub-regional local government associations.

### *Data*

Data were compiled for a total of ten networks, representing two types: 1) eight service delivery networks, each of which is a network of interlocal agreements that theoretically spans the county, uniting anywhere from two to all 44 jurisdictions in an interlocal agreement, and 2) two interpersonal networks, one for city administrators and one for mayors. Hypotheses one and two are tested using data from the networks of ILAs, and hypotheses three through six are tested by examining the effects of effects of interpersonal networks on the likelihood of ILAs forming between any given set of cities.

### *ILA networks*

Interlocal agreements are defined as any service sharing arrangement, written or unwritten, that exists between two or more local government jurisdictions. The primary source of data used to construct the eight networks of ILAs was the *Local Government Services Catalog*,

a comprehensive source of local government services data collected by the Michigan Citizen's Research Council (CRC). The CRC conducted a mail survey in the spring of 2005 of all local governments in Michigan's 20 most populated counties to inquire as to how services are delivered, including ILAs. The survey responses from Wayne County jurisdictions were used in this study to construct the data matrices for the networks of ILAs, and supplemented with information from the Southeast Michigan Council of Government's *Joint Public Services Database* ([www.semcog.org](http://www.semcog.org)). For the eleven jurisdictions that did not respond to the CRC survey, phone calls were made to the city/township clerk, and in some cases, interviews with city officials were conducted in order to obtain complete data for the county.

*Interpersonal Networks: Administrative and Electoral Conjunctions*

Data for the interpersonal networks, or administrative conjunctions, of city managers/administrators were collected through in-person interviews with all Wayne County jurisdictions having a full-time professional city manager, administrator, or supervisor. City managers and administrators were asked during interviews to describe all professional networks of which they are a member. Rather than a national professional association such as ICMA, in which members have little if any face-to-face contact or personal communication, the informal local managers groups specific to the metropolitan Detroit region were chosen to measure the effects of interpersonal networking on the likelihood of ILAs forming between cities. Through the interviews, managers identified three such informal professional groups in the metro area: the Downriver Area Municipal Managers, Southeast Michigan Municipal Managers and the Conference of Eastern Wayne. Although each of these groups meets a minimum of monthly, none of them are formally incorporated organizations, yet they were selected as the measure of administrative conjunction because they were discussed at length by interviewees as being among the most important meetings they attended in their roles as city administrators. City managers could participate in none of these groups, one of these groups, two of these groups, or all three these groups. In constructing the data matrix of interpersonal ties between

managers, an administrative conjunction tie is coded as present between two city managers/administrators if they are both identified themselves as a member of the same professional meeting group. City managers/administrators can be members of multiple groups, so the patterns of ties can become quite complex.

Data for the interpersonal networks, or electoral conjunctions, of chief elected officials (mayors and township supervisors) was collected through membership records of the boards of directors of Wayne County's three sub-regional local government associations. Wayne County has a three small-scale local government associations specific to the region, comprised of anywhere from six to nineteen jurisdictions who purchase membership in the association. These associations are the Conference of Western Wayne, the Eastern Community Conference and the Downriver Community Conference. Jurisdictions holding membership in these associations often have their chief elected official represented on the board of directors. Forty-one of Wayne County's 44 local governments belong to at least one of these associations, and some of the jurisdictions hold memberships in multiple associations. In constructing the data matrix for chief elected officials' interpersonal networks, an electoral conjunction tie is coded as present between the chief elected officials of two jurisdictions if they are both members of the board of directors of the same local government association. Data on board membership was collected via the associations' websites, and interviews with each of the Executive Directors of the three local government associations. Because local governments can be members of multiple associations, elected officials' patterns of ties are not limited to those board members of any one local government association, nor do they necessarily correspond to the patterns of ties in the managers' networks described above.

### *Method of Analysis*

Two methods available through UCINET (UCINET 6.64: Freeman, Borgatti, and Everett) were used in this analysis. The hypotheses related to the structure of ILA networks ( $H_1$  and  $H_2$ )



are tested using role and position analyses. This method calculates the centrality index and the density value for each of the eight ILA networks, five of which are systems maintenance functions, and three are classified as lifestyle services. Centrality and density are descriptive in nature; they reveal structural properties of the service delivery networks rather than predict the effects of exogenous phenomena on the networks.

The hypotheses pertaining to the role of interpersonal networks in predicting the likelihood of ILAs forming between cities ( $H_3$ ,  $H_4$ ,  $H_5$ ,  $H_6$ ) are tested using Quadratic Assignment Procedure (QAP) regression. The method is first used to estimate the likelihood of an ILA forming between two jurisdictions when their city managers share interpersonal networking (administrative conjunction) ties through an informal local professional group. The analysis is then repeated to estimate the likelihood of an ILA forming between two jurisdictions when their mayors share interpersonal networking (electoral conjunction) ties through participating as board members in same local government association. QAP regression is a type of network regression that uses bootstrapping to predict the likelihood of one network, or relation, given another relation (Hanneman and Riddle, 2005). In this analysis, the eight service delivery (ILA) networks serve as the dependent networks, while the two interpersonal networks serve as the predictor networks. UCINET estimates this likelihood through repeated random permutations of the ties. The models were estimated using the full partialling, original y permutation method. QAP produces estimates of standard errors and regression coefficients from the iterations of the row and column data in the dependent matrix, but does not produce an overall model fit statistic comparable to that found in linear regression analysis (Hanneman and Riddle, 2005).

In both types of analysis, networks are treated as a 44 row by 44 column adjacency matrix, 43 general purpose governments plus the county unit of government. All sociomatrices assembled for this analysis are symmetric, and ties between nodes are treated as binary and non-directed. In the ILA networks for example, if there is an ILA present between two cities, the tie is coded as present with a 1 in the cell that represents the link between those actors, and a 0

if there is no agreement. The networks measuring the interpersonal ties among local governing officials are measured in the same way: An administrative conjunction tie is coded as present, “1”, between two city managers/administrators if they are both members of the same managers’ group, and coded 0 if they are not both members. Similarly, an electoral conjunction tie is coded as present between two chief elected officials if they are both members of the board of the same local government association.

## **Results**

The first purpose of our study was to test hypotheses about the structure of various service delivery networks, based upon Lifestyle Model of Metropolitan politics. This theory suggests that ILA networks for systems maintenance functions should be more centralized and more dense than ILA networks for lifestyle services. Table 3 displays the finding from the centrality and density analyses.

Table 3 about here

The first hypothesis predicted that systems maintenance functions would be more highly centralized than lifestyle functions, while the second hypothesis suggested that networks of systems maintenance functions would be more dense than networks of lifestyle services. The network centralization indices largely confirm hypothesis one, as nearly all of the ILA networks for systems maintenance functions have higher network centrality scores than the ILAs for systems maintenance functions. Network centrality ranges from zero to one hundred percent, with higher centrality values representing more centralized networks. Service networks that are more highly centralized mean that numerous jurisdictions will be linked in a cooperative agreement with a single central actor, or provider of the service. In the context of service delivery, it is most likely that the county government or city of Detroit would function as the central actor. As centrality scores become lower, the service in question is more decentralized;

this does not mean that no cooperation exists, but simply that no single jurisdiction or set of jurisdictions function as key providers or central actors in the service network.

Density on the other hand, is a measure of how much total cooperation for the service exists among the 44 jurisdictions within the county. Networks with higher density values indicate the presence of more ties, or more cooperative service agreements, and networks with lower density values are indicative of less cooperation for the function. Density ranges from zero to one and represents the number of ties present in proportion to the total number of ties possible. While a density value of 1.0 is theoretically possible, it would mean that all 44 jurisdictions are connected to each other in an interlocal agreement, which is in practice, an infeasible scale of cooperation for most services. Hypothesis two suggesting that networks of interlocal agreements will be more dense for systems maintenance functions is partially supported; four of the five networks of systems maintenance functions have greater density values than those of the cooperative networks for lifestyle services. The centrality and density statistics are interpreted in greater detail below for each service network we studied, and the network maps help to illustrate the centrality and density values of each.

The network of agreements for road construction and maintenance is the most highly centralized (99.34 percent), meaning that nearly all nodes in this network, or jurisdictions in the county, are linked in a cooperative agreement with a single central actor. In this case, the central actor is the county unit of government. Figure 1 illustrates the pattern of ties in this network and helps to depict the highly centralized nature of this network.

Figure 1 about here

The overall level of cooperation for this function is lower than we might expect, given that roads construction and maintenance are classic systems-maintenance functions. While our hypothesis would suggest a higher degree of cooperation for these services, the density value suggests that only 5 percent of all possible ties actually exist among the 44 jurisdictions. Combined with the centrality index, this means that most jurisdictions in the county choose not

cooperate with each other for these services but rely on the county as the central provider for these functions.

Solid waste disposal is another example of a highly centralized network (95.45 percent). Figure 2 displays this network. Similar to the road maintenance network, the centrality of this network is explained by many of the suburban cities having landfill agreements and/or hazardous waste agreements with the county government. While this network is also somewhat less dense than we would expect for a key systems maintenance function (9 percent of all possible interlocal agreements between jurisdictions actually exist), this appears to be once again explained by the fact that most jurisdictions rely only on one entity to the extent they cooperate at all for this function, as opposed to cooperating with and among each other which would create a denser pattern of ties.

Figure 2 about here

The ILA network of wastewater treatment agreements is slightly less centralized (46.26 percent) because there are two different “centers” in this network. As Figure 3 illustrates, this service delivery network has two primary providers of the service (the county government and the city of Detroit), with nearly all other jurisdictions being linked to at least one of these “centers” and some of them being linked to both. As the figure also highlights, five other jurisdiction in the county have their own service delivery network for this function, and do not cooperate with one of the two primary “centers,” which also accounts for lower centrality of this network.

Figure 3 about here

In the network representing wastewater treatment agreements, 16.3 percent of all possible ties are present, making it one of the more dense service networks in the county. It is not surprising to find so much cooperation for this service, as wastewater treatment is a function that every jurisdiction must perform. Moreover, wastewater processing is a capital-intensive

function in that it requires specialized equipment that is too cost prohibitive for individual jurisdictions to own and manage independently.

The network of interlocal agreements for watershed management is also moderately centralized, with a centrality index of 66.46 percent. This network also has multiple “centers” or convening jurisdictions, and pattern of ties becomes more complex because many of the local government in the county are situated in more than one watershed, so many jurisdictions are party to more than one agreement. Figure 4 depicts the patterns of ties in this service delivery network.

Figure 4 about here

The network of watershed management agreements has the greatest density of all the networks we studied, with 26.4% of all possible ties present. This is not particularly striking since coordinated action is a necessity for functions like storm water management. Moreover, cooperating for this function involves relatively little time and effort, limiting the transaction costs associated with interlocal agreements. Most of the cooperation related to watersheds in Wayne County is established through memoranda of understanding (MOUs).

Public safety is the least centralized function within the county, with a network centrality index of 24.14 percent. It is unsurprising that this network is somewhat decentralized since many public safety functions are labor-intensive and cannot be provided over a large geographic scale without compromising response times. This network of agreements for this service is also somewhat low in density (7.2 percent of all possible ties present), signaling a level of cooperation that is lower than we might expect for a critical systems maintenance function. Figure 5 displays the network map for public safety agreements. As the network map shows, there are within this network with several groups of dyads and triads that choose to cooperate for day-to-day public safety operations such as street patrol as well as more capital-intensive services such as radio communications, and a larger network in which many members are party to an agreement for drug and crime prevention. This network suggests that public

safety services are not well-integrated as a whole across the county, as the network has many missing ties and “sub-networks” that operate in isolation from the main network.

Figure 5 about here

Another factor that may account for the low centrality and density of this network is the fact that public safety services also tend to be more politically charged than other types of systems maintenance functions, and local governments may desire to retain a greater degree of control over how these services are administered. Also, to the extent that safe neighborhoods are considered a lifestyle issue, public officials may view their jurisdiction as competing with others cities in providing the safest community, which reinforces the decentralization and lack of cooperation on public safety functions.

The next three service networks are those of the lifestyle functions. Although the network of economic development agreements has a relatively low centrality score (32 percent) it is the most centralized of the networks representing lifestyle functions which is somewhat unexpected. On the other hand, the overall extent of cooperation on this function is relatively low, as represented by the density value of .067, which is consistent with our hypothesis. Figure 6 displays the image of this service network.

Figure 6 about here

Conventional wisdom suggests that economic development is among the most politically charged local issues, as it is a highly competitive policy arena for local governments (Peterson, 1981). As such, we might expect this network to have very low centrality and density. If the cooperation in this network represented agreements among cities to abstain from competing through the use of tax incentives to attract businesses to their jurisdiction, we would likely see no cooperation. However, the nature of the cooperation in this network may help to shed some light on larger than anticipated network centrality. Many of the agreements in this network are related to the “demand-side” of economic development (Eisinger, 1988) in that they are for job training and workforce development programs, aimed at matching the skills of the local labor

force to the needs of industry. Displaced auto workers and those transitioning from welfare are typical users of these services. Job training and workforce development services have redistributive characteristics, in that they are designed to reduce local unemployment rates and to promote economic self-sufficiency. As such, local governments may cooperate in order to share the political and social burden of offering these services at the local level. In this network, the suburban city of Taylor functions as the central actor, rather than Wayne County government or the central city of Detroit. Taylor serves as the lead agency for a number of the economic development cooperation initiatives, including a brownfield redevelopment planning consortium. As a strong mayor city, Taylor would be expected to pursue a competitive rather than cooperative strategy with regard to economic development. However, the city's former mayor is a professional public manager by training, and spent most of his career as a state legislator before being term-limited, instilling in him the tendency to make governing decisions in the interest of the region, rather than in the interest of a single jurisdiction (personal interview, September 26, 2005).

Parks and recreation represent another set of lifestyle services. As our hypothesis predicted, the network of agreements for these functions has a low centrality index (23.37 percent) and this network is more decentralized than any of the service networks related to systems maintenance. Figure 7 displays the pattern of ties for this network. As the network map shows, while there is a greater than expected level of cooperation, there is no single "center" to this network. Moreover, there are several "sub-networks" within this network, in which several dyads and triads, or pairs and trios of jurisdictions, cooperate on parks and recreation but are not connected to the main network. The types of cooperation that exist within this network include a multi-jurisdictional initiative for building a system of greenways linking participating jurisdictions with non-motorized paths for recreational use, and user agreements between cities for senior centers, community centers, summer camps, and other parks and recreation facilities and programs.

Figure 7 about here

The density of the network for parks and recreation agreements is somewhat higher than we might expect given that they represent lifestyle service, with 14.9 percent of all possible ties present. On the other hand, parks and recreation services are for the most part, non-essential functions so it may be the case that local governments choose to cooperate on this service if doing so is their only alternative to discontinuing programs or reducing service levels.

The last lifestyle service we examined was Housing. Figure 8 shows the network map for this service area. As our hypotheses predicted, this network has very low centrality (10.85 percent) and extremely low density; only 1.3 percent of all possible cooperative ties actually exist in this network. In fact, this network has the lowest centrality and density values of all the service networks we examined. This is unsurprising because housing is more likely to be a competitive rather than cooperative local policy domain; as location of residence determines access to life opportunities, especially whether or not one will have access to quality public education (Rosenbaum, 1995). Cooperation for this lifestyle service is very minimal, with only six of the 44 jurisdictions cooperating on housing. The six participating jurisdictions in this network cooperate for transitional housing, permanent supportive housing, tenant-based rental assistance, and housing case management, through jointly administered programs funded by the federal department of Housing and Urban Development. The jurisdictions that are members of this network collaboratively apply for federal funds, and jointly deliver the services through an agreement that connects the housing consumers of one jurisdiction to the services offered by other participating jurisdictions.

Figure 8 about here

The second question we examine is whether or not interpersonal ties, or administrative and electoral conjunctions, statistically increase the likelihood of their jurisdictions cooperating in these eight service areas. Hypotheses three and four predicted that the interpersonal networks, or conjunctions, of both elected officials and those of professional city administrators would



increase the likelihood of their cities cooperating on systems maintenance functions. The results provide partial support for these predictions. Table 4 provides results from the QAP regressions.

Table 4 about here

The results suggest partial support for hypothesis three, which stated that jurisdictions will have an increased likelihood of cooperating for systems maintenance functions when their mayors are linked in an electoral conjunction (board members of the same local government association). Our findings demonstrate that the interpersonal networks of elected officials have a statistically significant likelihood of predicting increased cooperation on three of the five systems maintenance functions (watershed management, wastewater treatment, and public safety). The coefficients are interpreted in terms of the probability of an ILA existing between two jurisdictions, given the ties that are present between elected officials serving as board members of the three local government associations in Wayne County. Interpreting an example from Table 4, we can say that when two chief elected officials are linked in an interpersonal network as board members of the same local government association, there is a .260 increase in the probability that their cities will cooperate on watershed management. The only two systems maintenance functions that elected officials' conjunctions are not statistically significant in predicting are solid waste and roads construction and maintenance. Since cooperation on these functions is generally non-controversial and has the potential to offer greater economies of scale, it is unclear why interpersonal networking fails to increase the likelihood of cooperation for these services. Aside from interpersonal networks, there may be other factors that are more instrumental to explaining cooperation from these services, or it may simply be an indication that elected officials regard systems maintenance functions to be routine matters of administration, and they are less concerned with discussing these policy areas with their elected counterparts during meetings. In any case, additional research is needed to better explain the lack of statistically significant findings related to elected officials' networking on increasing cooperation for these functions.

The results generally support hypothesis four, which stated that interpersonal networks, or conjunctions, of professional administrators would increase the likelihood of ILAs existing for systems maintenance functions. Efficiency and effectiveness are common values of professional public managers (Nalbandian and Edwards, 1983) and therefore, it is unsurprising that administrators' interpersonal ties predict interlocal cooperation on nearly all systems maintenance functions we examined. Our results show that the conjunctions of professional administrators increase the likelihood of ILAs forming in four of the five systems maintenance functions examined. Once again, the coefficients are interpreted in terms of the probability of an ILA existing between two jurisdictions, given the ties that are present between city administrators through the three local professional networks in Wayne County. Using an example from Table 4, we can say that when two city administrators are linked in a network through the same local professional group, there is a .284 increase in the probability that their cities will cooperate on public safety. Only in the area of cooperation for road maintenance are administrative conjunctions not statistically significant in predicting increased cooperation. Since neither the interpersonal networks of elected officials or professional administrators increases the likelihood of cooperation for roads, this suggests some other factor is responsible for driving cooperation on this service, and points to the need for further research.

Turning to the issue of cooperation for lifestyle services, hypothesis five predicted that interpersonal networks of elected officials would have no impact or a negative impact on cooperation for lifestyle services, because elected officials make decisions according to the electoral time horizon (Frederickson, 1999), and may therefore try to confine the benefits of amenity services like recreation programs within their own jurisdiction. Also, greater inter-jurisdictional disparities are likely to exist around housing, economic development, and other lifestyle amenities like parks and recreation programs, making cooperation for these functions politically more difficult. However, we find some surprising results that are inconsistent with our hypothesis. As the results in table 4 demonstrate, electoral conjunctions have a statistically

significant *positive* effect, increasing the likelihood of interlocal cooperation on two of the three lifestyle functions we examined. When two majors are share a tie a members of the same interpersonal network, there is an increased probability of .317 that their cities will cooperate for parks and recreation, and an increased probability of .129 that their cities will cooperate for economic development. This finding is especially interesting and highlights the important role that interpersonal networks can play in forging cooperation, even increasing prospects for politically contentious, competitive functions such as economic development.

On the other hand, administrative conjunctions are *less* reliable predictors of increased cooperation for lifestyle services, which contradicts our hypothesis. Based upon the administrative conjunction theory, hypothesis six stated that city managers/administrators' interpersonal networks would *increase* cooperation for lifestyle functions because administrators are more likely to value social equity and govern with a longer time horizon (Frederickson, 1999), whereas elected officials have an incentive maintain the exclusionary status of their jurisdiction's services. Yet, this hypothesis is not supported because interpersonal networks of professional administrators increase cooperation for only one lifestyle service (parks and recreation,  $b = .375$ ). This finding suggests that electoral conjunctions may be even *more* important for enhancing prospects of cooperation on lifestyle services which are traditionally much more difficult areas in which to forge interlocal agreements (Rawlings, 2003; Julnes and Pindur, 1996). This finding underscores the value of interpersonal networks and highlights their importance to the establishment of interlocal service agreements for both systems maintenance functions and well as lifestyle services.

## **Conclusions and Implications**

The purpose of our study was twofold. First, we set out to test Williams' Lifestyle Model of Metropolitan Politics theory, by examining the structure of interlocal service delivery networks in a metropolitan area. Second, we sought to test Frederickson's theory of administrative

conjunctions by examining the effects of governing officials' interpersonal ties on the likelihood of ILAs forming between cities. Our results provide partial support for both of these theories, but some aspects of our findings contradict these theories in important ways, pointing to several questions for further research.

In testing the Lifestyle Model, the results of our study are consistent with those of earlier research that find interlocal service cooperation to be more common for systems maintenance functions than for lifestyle functions, (Rawlings, 2003; Savitch and Vogel, 1996; Julnes and Pindur, 1994) but contradict the more recent findings of Wood (2006) suggesting that cooperation on lifestyle is just as common as systems maintenance functions. This inconclusive body of evidence suggests that future studies of interlocal service cooperation should aim to test the Lifestyle Model, both through in-depth studies of single metropolitan areas as well as cross-metropolitan analyses. Our findings also have implications for theoretical arguments (Savitch and Vogel, 2000; Feiock, 2004) that a voluntary web of ILA agreements can integrate fragmented regions and create an effective macro-level system of service cooperation across the metropolis. The results of our analysis supporting the Lifestyle Model, suggest that interlocal service cooperation is more common and more easily centralized for politically "easy" systems maintenance functions, but a macro-level system of service cooperation may not be possible for lifestyle services. The results of our centrality and density analyses reveal that the macro-level metropolitan structure is more complete and well-integrated for systems maintenance functions. However, when it comes to lifestyle services, ILA networks are not well integrated across the region. Cooperation for lifestyle services is minimal, and when it does occur, the ties are among communities that share similar demographic and socioeconomic characteristics. Thus, the theoretical assertion that a voluntary web of agreements can effectively manage policy problems with spillover effects may be true for systems maintenance functions, but may hold less true for lifestyle services.

In our test of Frederickson's administrative conjunctions theory, our findings are in one sense consistent with those of Thurmaier and Wood (2002), who suggested that an underlying system of social networks was responsible for creating and maintaining the interlocal service agreements they studied in the Kansas City metro area. However, Thurmaier and Wood examined only the social networks of professional administrators, providing only a partial test of Frederickson's administrative conjunction theory. In examining the effects of interpersonal networks of both administrators and elected officials, our study builds upon the information generated by Thurmaier and Wood's analysis and provides a more complete empirical test of Frederickson's theory. We find that electoral conjunctions are nearly as important as administrative conjunctions for enabling interlocal cooperation on systems maintenance functions, and are even *more* important for enabling cooperation on lifestyle issues. Our finding that elected conjunctions are in some cases better predictors of interlocal service cooperation may contradict Frederickson's argument that local elected officials govern with a more short-sighted perspective. However, the motivations of elected officials for cooperating on services is less clear and points to a need for further investigation. As suggested earlier, elected officials may favor cooperation in some case in order to spread the political and social costs of these services, or may choose to cooperate because these services are too low priority for the jurisdiction to focus on exclusively. On the other hand, elected officeholders may engage in intergovernmental cooperation for projects and services that promise to bring visibility to the jurisdiction and that provide opportunities for credit-claiming. This may be particularly true for local elected officials with ambition for higher office (Bickers, Post, and Stein, 2006). Future studies might remedy these gaps in our understanding by examining how political incentives shape elected officials' decisions to engage in interlocal service cooperation.

While our study has shed additional light on the effects of interpersonal networks on interlocal service cooperation, a few limitations must be noted. First, our study is based on a single metropolitan area, limiting our ability to generalize from the findings. While Detroit is

characteristic in many ways of other large metropolitan areas, the patterns of service cooperation and public officials' networking we discovered may or may not be like those of other metropolitan areas. Second, our findings about the effects of administrative and electoral conjunctions not account for other explanations for why interlocal agreements may form between cities. Unlike conventional forms of regression analysis, network regression does not account for multivariate explanations; QAP regression accounts only for the influence of one network on the formation of another. While this method is helpful in demonstrating the statistical effects of one type of network on another, it is important to point out that other factors besides interpersonal networks are also likely to bear upon decisions to participate in interlocal service networks, such as fiscal stress, population characteristics, and form of government. Although interpersonal networking is difficult to model in linear analysis because of its endogenous relationship to cooperation (Feiock, Tao, and Johnson, 2004), future research might consider ways to proxy administrative and electoral conjunctions in traditional multivariate regression analysis, so as to isolate the impact of interpersonal networks in proportion to contextual factors.

Despite these limitations, our study furthers what is known about patterns of interlocal service cooperation in metropolitan areas and how interpersonal ties among public officials promote this type of cooperation. Ultimately, our analysis underscores the importance of interpersonal networking by both professional administrative *and* local elected officials in enhancing prospects for interjurisdictional service cooperation. Despite theoretical claims to the contrary, networking among elected officials is just as important for establishing and maintaining cooperative service agreements and for some types of functions these networks are even more important than those of professional administrators. What is most important about these interpersonal networks is that governing officials have the opportunity for routine and ongoing face-to-face contact, such as that afforded by informal professional meetings and local associations, in order to exchange information, build trust, and establish other norms that promote cooperation.

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<b>Table 1:</b> <b>Summary of Network Structure Hypotheses</b>			
<b>Service Delivery Network (ILA Network)</b>	<b>Type of Function</b>	<b>Predicted Centrality</b>	<b>Predicted Density</b>
Watershed management	Systems maintenance	High	High
Solid waste	Systems maintenance	High	High
Roads and bridges	Systems maintenance	High	High
Wastewater treatment	Systems maintenance	High	High
Public safety	Systems maintenance	High	High
Parks and recreation	Lifestyle	Low	Low
Housing	Lifestyle	Low	Low
Economic Development	Lifestyle	Low	Low

<b>Table 2:</b> <b>Summary of Associational Hypotheses</b>			
<b>Service Delivery Network (ILA Network)</b>	<b>Type of Function</b>	<b>Impact of City Managers' Networking on Likelihood of ILA</b>	<b>Impact of Elected Officials' Networking on Likelihood of ILA</b>
Watershed management	Systems Maintenance	+	+
Solid waste	Systems Maintenance	+	+
Roads and bridges	Systems Maintenance	+	+
Wastewater treatment	Systems Maintenance	+	+
Public safety	Systems Maintenance	+	+
Parks and recreation	Lifestyle	+	none or -
Housing	Lifestyle	+	none or -
Economic Development	Lifestyle	+	none or -

**Table 3:**  
**Structure of ILA Networks: Centrality and Density of Service Delivery Networks**

Service Delivery Network (ILA Network)	Mean Number Ties	Network Centralization Index	Network Density
<b><i>Systems Maintenance Functions</i></b>			
Watershed Management	11.36	62.46%	.264
Solid Waste	3.38	95.35%	.090
Roads and Bridges	2.23	99.34%	.050
Wastewater Treatment	6.45	46.29%	.163
Public Safety	3.10	24.14%	.072
<b><i>Lifestyle Services</i></b>			
Parks and Recreation	6.40	23.37%	.149
Housing	.545	10.85%	.013
Economic Development	2.86	32%	.067
<i>nodes=44</i>			

### Figure 1: Road Construction and Maintenance Agreements



Figure 2: Solid Waste Disposal



The network graph displays the following nodes and their connections:

- Nodes:** Lincoln Park, Volcanado, Colwell, Jones to Tap, Jones to Tap, Winnetka High, Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, Southgate, Lincoln Park.
- Connections:** The graph shows a dense web of connections between these locations, indicating a high degree of connectivity. Key connections include:
  - Lincoln Park to Volcanado, Colwell, Jones to Tap, Winnetka High, Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, and Southgate.
  - Volcanado to Colwell, Jones to Tap, Winnetka High, Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, and Southgate.
  - Colwell to Jones to Tap, Winnetka High, Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, and Southgate.
  - Jones to Tap to Winnetka High, Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, and Southgate.
  - Winnetka High to Oak Park, Oak Park to Tap, Winnetka County, Plano Tap, and Southgate.
  - Oak Park to Tap to Winnetka County, Plano Tap, and Southgate.
  - Winnetka County to Plano Tap and Southgate.
  - Plano Tap to Southgate.

Figure 7: Parks and Recreation Agreements

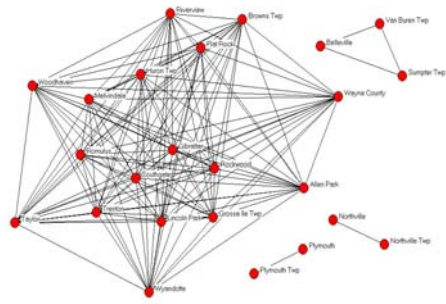


Figure 8: Housing Agreements



	Watershed Mgmt.	Solid Waste	Roads	Wastewater	Public Safety	Parks/ Rec	Housing	Eco Devo.
Watershed Mgmt.	1.00							
Solid Waste	.150***	1.00						
Roads	.142***	.209***	1.00					
Wastewater	.285***	.118***	.096*	1.00				
Public Safety	.097**	.050	.055	.105**	1.00			
Parks/Rec	.211***	.082*	.116***	.247***	.357***	1.00		
Housing	.048***	.030	.073*	.000	.005	.001	1.00	
Eco Devo.	.102**	.062	.084*	.126**	.170***	.244***	.042**	1.00
nodes=44								
***p<.01, **p<.05, *p<.10								

	<i>Systems Maintenance Functions</i>					<i>Lifestyle Services</i>		
	Watershed Mgmt.	Solid Waste	Roads	Waste Water	Public Safety	Parks & Rec	Housing	Economic Develop.
	b (se)	b (se)	b (se)	b (se)	b (se)	b (se)	b (se)	b (se)
Administrative Conjunctions (City Managers' Network)	.211*** (.007)	.200*** (.001)	-.039 (.462)	.232*** (.002)	.284*** (.000)	.375*** (.000)	-.033 (.390)	.080 (.075)
Electoral Conjunctions (Mayors' Interpersonal Network)	.260*** (.000)	.012 (.333)	.054 (.217)	.097** (.017)	.016* (.053)	.317*** (.000)	-.015 (.123)	.129*** (.000)

nodes = 44  
\*\*\*p<.01; \*\*p<.05; \*p<.01